Oil and Gas.

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In the old gas field in Indiana, covering parts of Tipton, Hamilton, Marion, Hancock, Shelby, Rush, Fayette, Henry, Wayne, Randolph, Madison, Delaware, Jay, Blackford, Wells, Huntington, and Adams Counties, where all farm houses and residences in the cities which grew in a few months, from small towns to large cities, supported by factories of different kinds, used gas as their fuel, there only remains some of the small towns and farmers using Indiana gas today. Some of the towns yet using Indiana gas are Oaklandon, McCordsville, Fortville, Pendleton, Lapel, Middletown, Windfall, Rushville, Arlington, Greenfield, Knightstown, Carthage, Milroy, St. Paul, Shirley, and Shelbyville. While the above towns are using Indiana natural gas, it is only used for lighting and cooking, as there is not sufficient quantity to be used for heating purposes.

Muncie, Anderson, Elwood, Alexandria, Fairmount, Hartford City, Marion, New Castle, Richmond, Noblesville, Tipton, Lynn, and Middletown are now being supplied with West Virginia gas, which is piped into the old mains once used to distribute Indiana gas. Some of the above towns made an abnormal growth during the gas boom period, in which hundreds of factories of different kinds, were erected in the various towns on the belief that natural gas was something coming from the inside of the earth, that was being generated as fast as it was liberated through the thousands of wells, and that it would last for all time to come. Many fortunes were lost by those who acted too strongly on the above erroneous ideas. The gas instead of being inexhaustible was limited in quantity, and came from crude oil, the origin of which was the distillation of the millions of small sea animals that were deposited at the same time the oil bearing rock was being formed in the bottom of the sea.

The Oakland City oil field produces enough gas to supply Winslow and Oakland City, as well as furnish power in the field for pumping.

Sullivan, for about 10 years, has been supplied by gas from Jamison oil pool, about two and one-half miles west of Sullivan. The supply of gas in this field has been more or less limited, as it is more an oil field, than a gas field. A good gas well has been recently drilled on the Springer farm (Sec. 12, Gill Township), by E. R. Riggs, which shows a volume of 1,300,000 cubic feet per twenty-four hours. The well has been connected to the mains supplying Sullivan. This well is some distance from any gas or oil production in Sullivan County, and promises to be the opening of a new pool for Sullivan County.

The pressure of the gas wells still producing in Indiana, is 71.5 pounds, which is a small decrease from the preceding year, due to a well giving out in the Oakland City field that was drilled during the year of 1914, and showed a pressure of 590 pounds, but had a small volume, and was soon reduced to nothing, as it furnished gas for the town of Oakland City and a part of the Oakland City oil field for a while.

The Indiana portion of the Lima-Indiana field in the year 1915, produced *363,708* barrels of oil from *3,124* wells. In addition to the natural decrease in the wells a great many of the small producers were pulled and plugged during the year, which accounts for the falling off of the production from what it was in 1914.

The production of the Sullivan County oil field for 1915, is a little short of what it was for 1914, on account of the price of crude oil going down to 78 cents and remaining there for a long time, during which period the operators practically stopped drilling any new wells pending an advance in prices. Since there is a natural decrease in the production of a well, the production of the field will suffer unless new wells are brought in fast enough to equal the natural falling off of the old ones. The production from 503 wells for the year was 547,500 barrels. During the early part of the year, two good gas wells were brought in by James Crawford, 6 miles southeast of Sullivan. The wells are some distance from any other production in the county and promise to be a lead to a new pool.

The Sullivan County oil field has proven the old theory, that a dome or anticline is necessary in the underlying formations before oil can be found, is not exactly correct, since in the main pools of the county the dip is only in one direction, the other being as nearly level as possible. In other words, the oil bearing stratum, if traced, will be found to run level for some distance

and will suddenly take a sharp dip to the west, as west is the direction of the general dip. Gas usually is found at, or near the point where the rock starts to dip, and the best oil wells will be found on down the slope; consequently, the oil cannot be said to be produced from a dome or anticline, since the territory containing the pool of oil does not have the necessary dip in all directions, from one point, to make it a dome or anticline.

The Oakland City, Princeton, and Petersburg oil fields combined, produced 136,570 barrels from 266 wells for the year. The Petersburg pool is about 4 miles west of Petersburg and is a new pool for Pike County. The Emory Oil Company, following the theory that gas comes from oil, drilled some wells near an old gas well, which was drilled a few years ago and now have several wells making from 50 to 75 barrels daily.

The total production for the state for the year was *1,047,778* barrels from *3,983* wells.

The total number of wells abandoned for the year was 877.

During the year, the Lynn Oil and Gas Company drilled three oil wells in Sections 8 and 17, in Township 2, North and Range 5, West in Daviess County, which is about four and one-half miles south of Cannelburg. A gas well drilled on the Griffin farm in the same section by J. W. Vincent, about three years ago, to a depth of 380 feet, led to the belief that an anticline existed in that vicinity and as a result the Lynn Oil and Gas Company drilled, up to date, three wells to a depth of about 725 feet, which promised to be about 40 barrel wells, and the vicinity promises to develop into a very good oil field.

The formations existing near the surface are the coal measures and the oil sand, which is about 30 feet thick, belongs to the Huron group of sandstones and shales, and is no doubt, the same sands as those which have produced gas and some oil at Loogootee for several years. Three dry holes were drilled about one and one-half miles east of the above mentioned wells, by E. R. Riggs of Sullivan, which indicates that the field will not have much eastern extent, but probably will extend to the west and southwest.

The Ohio Oil Company drilled a well on the farm of E. E. Stiles in Sec. 31, Taylor Township, Greene County, to a depth of 1,567 feet, with a smell of gas at 610 feet and a small showing of oil at the bottom of the hole. The following is a log of the above well:

LOG OF No. 1 WELL E. STILES FARM, SECTION 31, TAYLOR TOWNSHIP, GREEN COUNTY, INDIANA.

Surface to 15 feet, soil drift and mud.
15 to 20 feet.....Quick sand, 5 feet.
20 to 40 feet.....Soft mud, 20 feet.
40 to 45 feet.....Lime shell, 5 feet.
45 to 72 feet.....Shale and water, 27 feet.
72 to 80 feet.....Lime shell, 8 feet.
80 to 100 feet.....Shale and water, 20 feet.
100 to 120 feet.....Lime, 20 feet.
120 to 125 feet.....Broken shale, 5 feet.
125 to 250 feet.....Lime stone full of water, 125 feet.
250 to 300 feet.....Soft black mud, 50 feet.
300 to 310 feet.....Lime shell, 10 feet.
310 to 610 feet.....Hard lime stone, 300 feet.
610 to 615 feet.....Soft lime, 5 feet.
At 610 feet lime got soft and brown, with a smell of gas, and you could just notice a rainbow of a color of oil.
615 to 710 feet.....Brown lime stone, 95 feet.
710 to 800 feet.....Brown lime full of water, 90 feet.
800 to 1,250 feet.....Black shale, 450 feet.
1,250 to 1,285 feet.....Lime shell, 35 feet.
1,285 to 1,290 feet.....Very hard lime, 5 feet.
1,290 to 1,400 feet.....Dark shale, 110 feet.
1,400 to 1.487 feet.....Brown shale, 87 feet.
1,487 to 1,642 feet.....Niagara rock, 155 feet.
At 1,567 feet rock got soft and for ten feet we had a brown lime with a show of oil not enough to get any pure oil, but really more than you would call a rainbow.
Total depth of well, 1,642 feet.
Drilling commenced, September 8th, 1915.
Drilling was completed, November 11th, 1915.
Pipe used in well was, 12½ inch casing, 80 feet; 10 inch casing, 531 2-12 feet; 8¼ inch casing, 885 feet and 6¼ inch casing, 1,584 feet.

Contractor, IRA C. HUFF.

The Bedford Oil and Gas Company in 1913, drilled an oil well one and one-half miles west of Heltonville to a depth of 1,750 feet, at 1,680 feet they struck oil in Trenton rock which was estimated to be a 15 barrel well. The same company drilled another well, 1,100 feet deep near the first well, in which they struck a good flow of gas at 1,090 feet. The formation immediately underlying the surface in this vicinity is the Knobstone shale, it appears to be in the form of a dome or anticline in this vicinity, with the crest a short distance west of Heltonville. The Knobstone shale area in this vicinity is surrounded by the Bedford and Harrodsburg

limestones, which is unusual, since the Knobstone shale is a lower geological formation than the limestones and would regularly be found to the west of them, but in this vicinity, portions of the Bedford and Harrodsburg limestones are found east of the Knobstone shale out-croppings, all of which indicate that the underlying formations are high and are in the right position to produce oil or gas.

A local company at Bainbridge drilled a well on the Miller farm, one and one-half miles west of Bainbridge to a depth of 1,647 feet, at 1,450 feet they got a good showing of oil, the rock producing the oil was the Jeffersonville limestone.

A dry hole was drilled one mile west of Loogootee in the hope of getting oil along the west edge of the old Logoootee gas field which has been producing for many years. At the east edge of the town of Loogootee, three oil wells are producing about 20 barrels of oil daily, from one of the lower sands of the Huron group. The sand is the same as that which produces the gas west of town and is about 500 feet deep.

The Gilt Edge Oil Company, of Indianapolis, drilled a dry hole near Wilkinson, in Hancock County, which is in the old Trenton rock field of Indiana. Some of the old gas wells in that vicinity have shown some oil, but the quantity is so small that it is not profitable to pump it.

A local company at Veedersburg recently drilled three wells near Veedersburg to a depth of about 1,000 feet. They were dry holes except one, which had a showing of oil at 610 feet.

The E. M. Treat Company, of Pittsburg, Pa., drilled one well at Sargent, P. O., and two at Blankanship, both of which are in the northern part of Martin County. The wells were drilled about 800 feet deep and all had a small showing of oil. The outcropping formation in hills of that vicinity is the Mansfield sandstone, with the sandstones and limestones of the Huron group outcropping in the valleys where erosion has cut through the Mansfield sandstone and exposed the Huron group. Near Sargent P. O. the oil has been seeping out of the rocks where a small stream has cut its way through them. This condition is often mistaken as an indication that oil can be found in the lower formations, the idea is erroneous as nearly all sedimentary deposits contain more or less bituminous matter, and, if found in the form of an anticline, will contain a pool of oil, but on the other hand, if the deposit is penetrated in the syncline nothing will result, except a water well showing that the water pressure is holding the oil in the

top of the anticline. But where an oil bearing sand, lying near the surface has been cut by a stream, there will be as much oil seep out of the rock in the shape of a syncline as there will where it is in the shape of anticline.

There are some good indications of an anticline adjoining and to the southeast of Tunnelton in Lawrence County. The formations near the surface in that vicinity are the Knobstone shale and the Harrodsburg limestone. They have a slight dip in all directions from a point near what is locally known as the Big Tunnel, which is a tunnel on the B. & O. Railroad, southeast of Tunnelton. Trenton rock in this vicinity is about 1700 feet deep and the Jeffersonville limestone, which is an oil-bearing stratum, should be about 1,000 feet deep.

W. R. Dryden, while drilling a water well on his farm near Foultz, struck a good flow of gas at 267 feet deep. The well tested 80 pounds pressure and had a volume of 120,000 cubic feet per twenty-four hours. The gas is produced from the Niagara limestone and is now being used for domestic purposes on the farm. On belief that the gas in the Niagara limestone was an indication of an anticline, some local parties drilled a well 1,000 feet deep in search of oil, but got a dry hole.

The Central Refining Company and the Indian Refining Company drilled three dry holes near Hazleton to a depth of 2,000 feet. The wells were drilled on the belief that the La Salle Anticline of Illinois extended into Indiana at that point. The wells were finished in the Mississippi limestone. The formations penetrated, correlate with the formations in the wells of the Oakland City and Princeton fields. A well was drilled one mile northeast of Linton, on the Lucien Gillett farm, to a depth of 2,085 feet. From 2,046 to 2,060 it produced a small amount of gas and mineral water that overflowed the top of the casing. The gas was not in sufficient quantity to be of any value.

The following is a log of the well from 1,030 feet to the bottom:

1,030 to 1,180 feet	Brown limestone.
1,180 to 1,250 feet	Dark shale with break of limestone.
1,250 to 1,276 feet	Light sand with water.
1,276 to 1,573 feet	Gray shale with streaks of lime.
1,573 to 1,580 feet	Sand with show of gas.
1,580 to 1,835 feet	Gray and dark shale.
1,835 to 1,905 feet	Water sand with breaks of shale and red rock.
1,905 to 2,046 feet	Black shale, very hard.
2,046 to 2,060 feet	Gray limestone, gas with some water.
2,060 to 2,085 feet	Gray limestone with water.

Immediately east of the above well the foundations seem to rise rapidly to the east and to continue to do so for about a mile, when they then dip slightly to the east, having the appearance of a well-defined anticline.